Local values and fairness in climate change adaptation: Insights from marginal rural Australian communities

Sonia Graham [a,*], Jon Barnett [b], Colette Mortreux [d], Anna Hurlimann [c], Ruth Fincher [b]

[a] School of Social Sciences, The University of New South Wales, Morven Brown Building Room G16, Sydney, NSW 2052, Australia
[b] School of Geography, The University of Melbourne, 221 Bouverie St, Carlton, VIC 3053, Australia
[c] Faculty of Architecture, Building and Planning, The University of Melbourne, Architecture and Planning Building (Building 133), Parkville, VIC 3010, AUSTRALIA
[d] Geography, College of Life and Environmental Sciences, University of Exeter, Amory Building, Rennes Drive, Exeter EX4 4RJ, United Kingdom

ABSTRACT

A key criterion of successful adaptation to climate change is that it avoids potential inequalities arising from climate impacts or from adaptation strategies themselves. Recent research on adaptation in developing and developed countries argues that the measures of such fairness cannot be captured by standard metrics of vulnerability and should be situated in the milieu of people's daily lives and temporalities. Yet there is little empirical evidence to support this theoretical argument. This paper describes a method, and presents findings from research that aimed to understand and classify the lived values of four marginal rural communities at risk of sea-level rise in Australia to inform adaptation planning and implementation. Our research finds that there are at least five types of primary residents and second homeowners attached to these four low-lying coastal communities. Some of these residents are more likely to be amenable to relocation if their needs for affordable living and belonging are met. For others, there may be little that can be done to compensate for the loss of place attachment, and implementing a measured approach that provides them time to adapt to the idea of change and form connections to new places is the best that could be achieved. We discuss the implications of place-specific and people-centric values for achieving fair adaptation.

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1. Introduction

Governments worldwide are preparing for climate change through the development of national adaptation strategies and plans (e.g. the 39 National Action Plans for Adaptation (NAPA) in least developed countries). There is also a proliferation of local adaptation plans being developed by municipalities (Baker, Peterson, Brown, & McAlpine, 2012; Carmin, Anguelovski, & Roberts, 2012). The concept of fairness[1] pervades adaptation plans, with many aspiring to achieve fair adaptation by prioritising the needs of those "most at risk", "most at need" or the "most vulnerable", particularly the poor, homeless, elderly, children, people with disabilities, and the mentally ill (Barrett, 2013; Collins, 2016; Huq & Khan, 2006; Klinsky, 2010; Smucker et al., 2015). However, it is unclear how such people are identified and considered, how their needs and interests are identified and accommodated (Adger and Netlson, 2010; Hamin and Gurran, 2015; Markowitz, Grasso, & Jamieson, 2015), and how controls are put in place to ensure adaptation efforts reduce their vulnerability[2] (Holland, 2017) and do not overlook or exacerbate existing inequalities or create new inequalities (Barnett and O'Neill, 2010; Forsyth, 2014; Mikulewicz, 2017). Thus, despite the widespread recognition of the principle, it is unclear if and how fair adaptation is being pursued in practice at local scales in developing and/or developed countries.

In the last decade three emerging bodies of social science research have sought to understand how fair adaptation can be achieved (Fig. 1). This has involved: elaborating what fair adaptation is and how this relates to climate justice more broadly; identifying the challenges that governments face in developing and implementing (fair) local adaptation plans; and developing

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* Corresponding author.

E-mail addresses: sonia.graham@unsw.edu.au (S. Graham), jbarn@unimelb.edu.au (J. Barnett), c.c.mortreux@exeter.ac.uk (C. Mortreux), anna.hurlimann@unimelb.edu.au (A. Hurlimann), r.fincher@unimelb.edu.au (R. Fincher).

[1] We follow Grasso's (2007) definitions of fairness and justice. Justice principles exist independently of any process of judgment while fairness relates to individual's perceptions of a judgment process.

[2] Throughout this paper we discuss diverse ways that vulnerability can be interpreted. When we refer to traditional understandings and measures of vulnerability, we refer to the commonly-used definition of vulnerability to climate change as "the degree to which… systems are susceptible to, and unable to cope with, the adverse impacts" (Schneider et al., 2007, p. 782).
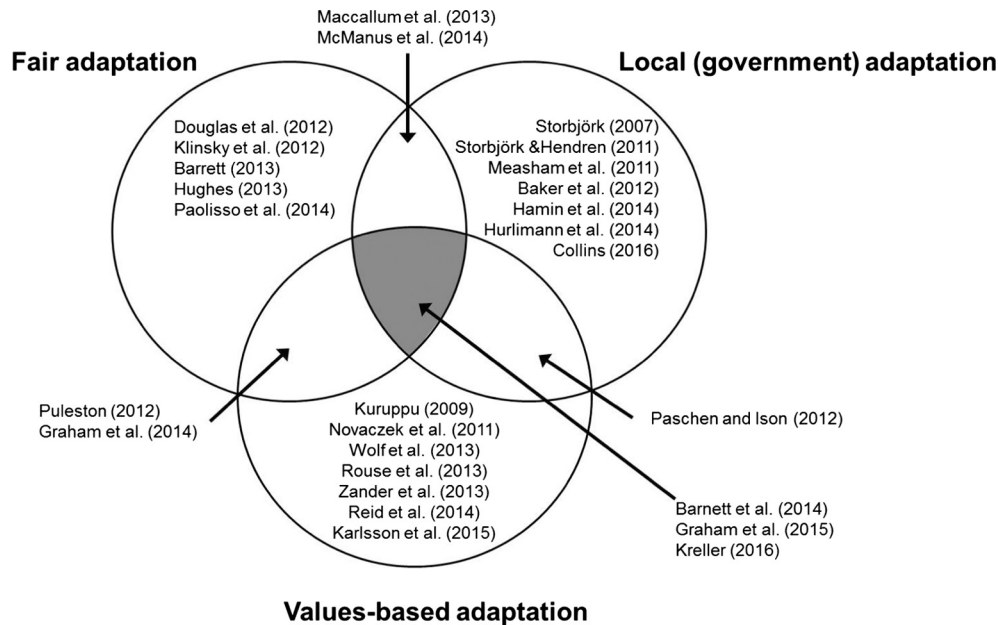
Fig. 1. Examples of empirical research conducted on fair adaptation, local government adaptation and values-based adaptation in Australia and internationally.

processes for democratising adaptation to ensure local values are incorporated into adaptation plans. While there is considerable scope for these three bodies of literature to inform one another and government policies to enhance adaptation outcomes in practice, there is little research at the nexus of these three domains – a contribution which this paper aims to make.

The aim of this paper is to consider how an understanding of lived values can inform fairer local adaptation plans. We do this through a study of values in four small coastal communities in a regional local government area in the state of Victoria, Australia, whose physical and social geography renders them highly vulnerable to sea-level rise. The large land area of the Local Government Area (10,924 km^2) and long coastline (approximately 100 km) compared to the small population (41,355 residents) means the municipality has limited resources to protect its eight coastal settlements from sea-level rise. The residents are also among the most socially disadvantaged in Australia: their lack of political voice (Hurlimann et al., 2014) and little access to markets and services means their experiences and capacity to adapt is limited compared to their wealthier and more politically powerful counterparts in urban coastal Australia.

The article begins with a discussion about fairness, the challenges governments face in developing and implementing local adaptation to climate change, and the ways in which a values-based approach can assist governments to achieve fair local adaptation. Background information is then provided about the four marginal coastal communities that are at risk of sea-level rise in eastern Victoria, Australia, as well as details of the mixed-method approach adopted. The results describe five types of residents who live in the four communities and how they may be differentially affected by sea-level rise, challenging and expanding traditional notions of vulnerability. Finally, we elaborate the issues that these diverse values raise for fair adaptation policies and programmes in these four communities, and more broadly.

This study builds on past adaptation research undertaken in eastern Victoria which has sought to understand how fairness is understood by people in marginal coastal rural communities (Graham, Barnett, Fincher, Mortreux, & Hurlimann, 2015) and local governments (Graham & Barnett, 2017), how local communities understand sea-level rise in relation to their everyday lives

(Fincher, Barnett, Graham, & Hurlimann, 2014) and how regional governments can better plan for adaptation (Barnett et al., 2014; Hurlimann et al., 2014). Previous research has sought to understand the values of different types of residents who live within a larger community along the same coastline in an adjoining jurisdiction, and that has a wider range of adaptation options available to it (Graham, Barnett, Fincher, Hurlimann, & Mortreux, 2014). Here we seek to understand how residents in four remote and small communities (fewer than 300 residents in each) with few resources and adaptation options, value their everyday lives. This study also builds on past research in developing countries that has sought to understand the values of small island and remote coastal communities in the context of climate adaptation (e.g. Karlsson & Hovelsrud, 2015; Kuruppu, 2009; Mortreux & Barnett, 2009).

2. Fairness, values and local government adaptation efforts

Climate change invokes questions of fairness, blame and responsibility because, like other environmental "bads", it affects 'where we live, work and play' (Agyeman, Schlosberg, Craven, & Matthews, 2016). Climate change raises questions about who causes, benefits and loses from its impacts and who is required to pay to mitigate or adapt (Adger, 2016; Gardiner, 2011; Markowitz et al., 2015). These questions are at the heart of climate justice scholarship, which seeks to find solutions to the perceived inequities in who has caused climate change and who is most affected by its impacts (Barrett, 2013; Thomas & Twyman, 2005). Such questions also relate to broader theories of justice that seek to identify how justice can be advanced beyond developing just institutions and rules by being attentive to people's everyday lives (Sen, 2009; Agyeman et al., 2016). To date, the majority of research on climate justice has focused on the international politics of mitigation and the developed/developing and present/future generational divides (Caney, 2005; Schlosberg & Collins, 2014). More recently, the concept of fair adaptation has received increased attention in recognition of the formidable justice challenges that climate adaptation creates, especially at local scales (Adger, 2016; Paavola & Adger, 2006). We seek to add to the latter body of research, which highlights the importance of fairness to vulnerable local communities regardless of their level of development.

Research on climate justice, including fair adaptation, has focused on two main dimensions of fairness: distributive and procedural (Forsyth, 2014). In the context of adaptation, distributive fairness involves ensuring that *outcomes* are equitable[3] (Adger, 2013). It involves asking questions such as "who bears the costs of adaptation?" and "what kinds of change are acceptable?" (Adger, 2013, p. 71). Procedurally fair adaptation involves *decision-making* that is democratic, participatory and inclusive (Paolisso et al., 2012; Mikulewicz, 2017), by asking questions about "how do we define, as well as distribute, these objectives fairly" (Forsyth, 2014, p. 232), "whether vulnerable populations have the political power – or political capability – to influence adaptation decisions" (Holland, 2017, p. 2), and "who takes action?" (Adger, 2013, p. 71).

Such questions of fairness are most visible and acute at local levels (Paavola & Adger, 2002), yet there is little empirical research that investigates how governments perceive fairness when developing and implementing local adaptation policies (Graham and Barnett, 2017). For example, while there is evidence that adaptation can exacerbate gender inequalities in developing countries, it is unclear if and how gender justice is incorporated into adaptation planning (Terry, 2009).

Much of the research on governments' experiences with developing and implementing local climate adaptation plans focuses on identifying the barriers that governments face (e.g. Bradley, van Putten, & Sheaves, 2015; Hamin, Gurran, & Emlinger, 2014; Maccallum, Byrne, & Steele, 2014; Measham et al., 2011; Pasquini, Ziervogel, Cowling, & Shearing, 2015). There is considerable attention given to institutional constraints, such as competing priorities within local governments, resources, access to information, decision-making processes and interactions with other levels of government (Hamin et al., 2014; Karlsson & Hovelsrud, 2015; Pasquini et al., 2015; Roberts, 2008). Some attention is also given to the ways in which community values and beliefs intersect with institutional adaptation decision-making (Paschen & Ison, 2012). Where values and beliefs are discussed, attention is often given to the ways that beliefs about climate change constrain climate adaptation for local governments (Hamin et al., 2014; Moser & Ekstrom, 2010) or how material values, such as property and infrastructure, can be protected (Ishaya & Abaje, 2008; Roberts, 2010).

Most of this research is philosophical in nature, which means the difficult task of determining measures of fairness for evaluating and monitoring outcomes is avoided, or assumed to be encompassed in standard metrics of social vulnerability which, at their most sophisticated, rely on sustainable livelihoods based criteria: natural, social, financial, physical and human capital (Hahn, Riederer, & Foster, 2009). Yet when considering outcomes of climate change or climate change institutions universal metrics are unsatisfying (Adger, Brown, Barnett, Marshall, & O'Brien, 2013; Nielsen & Reenberg, 2010). Much of that which constitutes 'loss', or 'insecurity', or 'success' depends on personal and local contexts, and so demands measures derived from more situated forms of knowledge (Kuruppu, 2009; Morrissey & Oliver-Smith, 2013; O'Brien and Barnett, 2013; Tschakert, Tutu, & Alcaro, 2013). Some adverse outcomes – such as losses of health and life – can be said to be universal and so measured across diverse populations, but many – such as the loss of social cohesion or occupational identities – are far more culturally specific and less amenable to standard measures (Barnett, Tschakert, Head, & Adger, 2016). Understanding local perspectives of fairness in outcomes therefore requires knowledge of what people value about their lives and what people see as urgent (Forsyth, 2014), which demands more context-specific and democratic community-driven assessments and

measures (Galliard, 2010; Martin, Gross-Camp, Kebede, McGuire, & Munyarukaza, 2014; Mikulewicz, 2017) that recognise psychological, symbolic and emotional dimensions (Agyeman, Devine-Wright, & Prange, 2009). It is this new knowledge that we seek to advance in this paper.

In their review of the research on the role of human values in public engagement with climate change, Corner, Markowitz, and Pidgeon (2014) found that many studies conceptualise values in a way that is consistent with social psychologists understanding of values as a guiding principle. Graham et al. (2013) argue that in the context of understanding the impacts of climate change, it is useful to understand the things people value about their everyday lives, i.e. their lived values. This is consistent with a human geography understanding of values and reflects recent developments in environmental justice that focus on the practices of everyday life (Agyeman et al., 2016). These values are not general attitudes that people hold but rather are practices lived by people in places (Graham et al., 2013). Graham et al. (2013, p. 49) proposed that there are five types of lived values that are likely to be affected by sea-level rise: health lived values relate to social determinants of survival; safety lived values relate to feeling safe and secure; belonging lived values are about meaningful social relationships as well as tradition, history and heritage; esteem lived values are about personal pride, job satisfaction and social status; and self-actualisation lived values are about identity and self-improvement.

Empirical studies conducted since then in developing and developed countries have identified various social values at risk of climate change and sea-level rise that are consistent with this definition and categorisation of values (e.g. Karlsson, van Oort, & Romstad, 2015; Kreller, 2016; Reid et al., 2014). Further, Karlsson et al. (2015) found that studying valued objects at risk is useful for understanding different groups in the community and the trade-offs they are willing to make to safeguard their community's future. Thus lived values exist beyond of the context of climate adaptation and vulnerability, but are useful for understanding whose everyday lives are vulnerable to climate change and provide a social metric for evaluating the relative fairness of local adaptation options.

While social researchers in developing and developed countries argue that local values need to be incorporated into climate adaptation to achieve fairer processes and outcomes, there are few studies that explore lived values and fairness together in the context of climate adaptation. For example, Graham et al. (2014) explored the values of residents in Lakes Entrance, a coastal town in Victoria, Australia, and found that understanding community values can help to identify who is vulnerable and how adaptation options may benefit some groups at the expense of others. We seek to extend this research at the interface between local values and fairness by going beyond examining a single community to considering multiple small communities within the one local government jurisdiction. This is important because different communities and different people within a community prioritise different adaptation options (Paolisso et al., 2012), and this challenges the ability of local governments to achieve fair adaptation. This also speaks to recent developments in the environmental justice discourse that are moving from individual to community-level conceptualisations of justice (Schlosberg, 2013).

The aim of this study is to use a quantitative approach to identify the values at risk in four marginal rural communities in the Wellington Shire Council, situated in the Gippsland East region of the state of Victoria Australia. It explores how the local government that spans these four communities can use this information on lived values to ensure that adaptation plans are fair within and across communities, while working within the constraints of limited finances and adaptation options.

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[3] As explained by McManus, Shrestha, and Yoo (2014, p. 3) there are multiple definitions of equity. Here we use the term to refer to equity in the distributions of outcomes.

3. Case study locations

We examined the lived values and fairness of adaptation to sea-level rise in four small coastal communities—Port Albert, Manns Beach, McLoughlins Beach and Seaspray—in Wellington Shire on the Gippsland East coast (Fig. 2), of the state of Victoria. The Gippsland East coast is an ideal place to study local adaptation to sea-level rise because it is considered to be highly vulnerable to flooding and sea-level rise (Department of climate change, 2009), already experiences coastal flooding, and has been the site of controversial decisions about adaptation through the imposition of planning restrictions (Hurlimann et al., 2014; Macintosh, 2013). Most settlements in the region are small and experience relational remoteness (Fincher, Barnett, & Graham, 2015); they lack the political and socioeconomic connections that characterise marginal communities the world over, and similarly struggle to maintain investment, growth, wealth, and populations (Bock, 2016). In these communities, there is limited capacity for local or governmental institutions to manage the risks posed by sea-level rise. In addition, there is a declining youth population, who are moving to the capital cities for education and employment opportunities (ABS, 2011; Edwards, Weldon, and Friedman, 2011), and there is a sense of rural decline and settlement abandonment, with approximately one in six houses for sale (Barnett et al., 2014).

There are few coastal environments in the world that have been as intensively researched as the Gippsland East coast. Since 1995 numerous studies have investigated the effects of sea-level rise, changes in wind and waves, and subsidence on extreme sea-levels in Gippsland East (e.g. McInnes, Macadam, & Hubbert, 2006; McInnes, Abbs, & Bathols, 2005, Mcinnes, Macadam, Hubbert, Abbs, Bathols, 2005, Wheeler, Kunapo, Coller, Peterson, & Mcmahon, 2009; Wheeler, Peterson, & Gordon-Brown, 2010). The effect of these studies has been to build awareness among the local, state and national governments about the physical problem of sea-level rise in Gippsland East.

There is little infrastructure in the four communities. Port Albert and Seaspray have a general store with postal services, community hall and café. Seaspray has a Surf Life Saving club, caravan park and a primary school. Port Albert has a pub, a museum, a restaurant and some accommodation. There are no shops, eateries or accommodation available in McLoughins Beach or Manns Beach. All four towns have at least one park, boat ramp and jetty/pontoon. Almost all the infrastructure in the four communities is located within 1 m of current mean sea levels. The nearest towns with amenities are Yarram for Port Albert, Manns Beach and McLoughlins Beach, and Sale for Seaspray (Fig. 1).

All four communities are relatively disadvantaged socio-economically, ranking in the lowest quintile in the Australian

Fig. 2. Location of four case study sites on the Gippsland East coast.

Table 1
Socio-demographic information for the four study sites in Wellington Shire Council. Source for population data: ABS (2011).

Towns	Number of occupied dwellings	Survey sample	Median household income (weekly)	Median age		Number of people per household	
				Population	Survey sample	Population	Survey sample
Port Albert	119	51	$608	57	55–64	1.9	2.2
Seaspray	112	52	$933	48	55–64	2.4	1.9
McLoughlins Beach[*]	62	20	$773	51	55–64	2.2	1.5
Manns Beach[*]		11	$635	53	55–64	2.1	2.5
Victoria	**5 354 042**		**$1216**	**37**		**2.6**	

[*] McLoughlins Beach and Manns Beach are contained within larger collection districts and therefore the numbers presented here may not accurately reflect the populations of these small communities.

Bureau of Statistics Socio-Economic Index (ABS, 2011; Table 1). The populations are also considerably older than the Victorian population, with median ages 11 to 20 years higher than the state median of 37. This indicates that the four communities are physically and socially vulnerable to sea-level rise.

Seaspray and Port Albert have been the focus of some controversial decisions associated with the urban planning system's response to future sea-level rise (Macintosh, 2013, Rintoul, 18/7/2011). The planning system has been driven by higher (state) level policies. Local residents and developers are already being required to incorporate predictions regarding sea-level rise (20 cm by 2040) into their land use planning permit applications. Macintosh (2013) describes the adaptation approach used in the state as inequitable and 'maladaptive' because it is based on deterministic decision-making, fails to promote robust responses and increases the social costs of climate change. In these communities, the main adaptation options of protection—using hard and soft structural options—and accommodation—changes to building codes and emergency planning—are only short-term options that are likely to be too expensive in the long term. This means that retreat is the only viable long-term strategy for many of these communities.

Recognising the limited options, both the local government and local residents are concerned about the fairness of adaptation processes and outcomes. Council staff and local residents have expressed concerns about the ways local values will be impacted by sea-level rise and climate change more broadly (Graham & Barnett, 2017). However, the concerns raised by local residents are not always consistent with those identified by the local government. For example, residents expressed concerns that the local government's understanding of what residents needed was inconsistent with residents' needs (Graham et al., 2015). Therefore, there is a need to understand the differences and similarities in lived values that exist in these four communities and the ways in which these values can be equitably incorporated into future planning decisions. This will help ensure that decision makers do not make assumptions about community values or local conceptions of fairness and provides a way in for communities to take greater ownership of the adaptation process (Holland, 2017; Galliard, 2010; Martin et al., 2014; Mikulewicz, 2017).

4. Methods

The method used was based on the theory of lived values, and associated framework, explained in Graham et al. (2013). Graham et al. (2014) provide one method for operationalising the framework that involves conducting semi-structured interviews that are used to tailor the design of a quantitative survey, the data of which is then analysed using cluster analysis. We followed the method described in Graham et al. (2014), although here we used a mail-out survey instead of a phone survey because there are a large number of second home-owners who occasionally live in the towns. Additionally, publicly accessible phone numbers for the residences are not widely available.

4.1. Scoping interviews

In April 2012 we conducted 17 semi-structured scoping interviews with residents and second home-owners of the four communities (four interviews each in Port Albert, Manns Beach and McLoughlins Beach, and five in Seaspray). We purposively sought to speak to a diverse group of community members to ensure that we identified as many lived values as possible. A total of 113 lived values were identified across all the interviews, although each interviewee only held a subset of these and only 32 were consistently identified across all four communities. The lived values most frequently mentioned during the scoping interviews were used as the final list of 31 lived values included in the mail-out survey, ensuring that there were lived values from each of the five categories identified in Graham et al. (2013).

Analysis of the scoping interviews indicated that some of the intra and inter-community variability in interviewees' lived values was related to life circumstances, in particular their: employment status (e.g. working, studying or retirement), level of involvement in the local community (community group membership, number of close friends and residence status—permanent or part-time), where they moved from (city or regional area), and history of association with the Gippsland East region (family connection). The analysis of the scoping interviews informed the survey design, particularly the questions on lived values and personal background, as well as selection of variables for the cluster analysis.

4.2. Mail-out survey

A mail-out survey was used to determine whether the lived values identified in the semi-structured interviews were held by the wider communities, the relative importance attached to these values, the distribution of these values across and within the communities, and whether there were any other lived values that were important but that had not yet been identified. There were five parts to the survey: 1) introduction; 2) lived values; 3) everyday activities; 4) social networks; and 5) socio-economic information. A combination of open- and closed-ended questions were used to ensure that as many lived values as possible were captured (not just those that had been previously identified) while also measuring the relative importance of the 31 lived values.

During August 2012 surveys were hand-delivered to every home in Manns Beach, McLoughlins Beach and Seaspray because many of these homes do not have letterboxes. The post office in Port Albert agreed to place a survey in every post office box for the town as well as provide surveys to residents who came into the general store who do not own post office boxes. Follow-up reminder postcards (recommended by Dillman, 2007) were also distributed in this way. Wellington Shire Council mailed the survey to residents whose primary residence was listed as an address outside of the four communities.

One hundred and thirty-four respondents answered the survey, representing almost half of all households in the four communities

(Table 1). Respondents were slightly older than their respective populations, with the exception of Port Albert. The number of people per household was slightly smaller than the respective populations for Seaspray and McLoughlins, but slightly larger for Port Albert and Manns Beach (Table 1).

Cluster analysis was used to explore the commonalities and differences in lived values within and across the four communities. The method used followed Graham et al. (2014). The variables selected for inclusion (employment status, business ownership, family connection, community group membership, social network, residence status and previous location of residence) were categorical and were standardised by transforming them into dummy variables. Each variable was examined to determine whether any categories should be collapsed (e.g. merging those employed full-time and part-time). Correlations were run to ensure that there were no redundant variables among those selected. The only selected variables with high correlations were 'working' and 'retired'. The correlation coefficient was 0.713 (the correlation coefficients among the other variables were all less than 0.47) and so 'retired' was removed from the analysis. The study used hierarchical followed by k-means clustering with pairwise deletion of missing values. The k-means cluster analysis was run with up to seven cluster solutions because the scoping interview analysis indicated there may be up to seven types of residents across these four communities based on their life characteristics.

5. Results

Overall, survey respondents identified 101 things that they value about the four communities, with 72 lived values identified in Port Albert, 62 in Seaspray, 41 in McLoughlins Beach and 37 in Manns Beach (see Supplemental file). Nineteen of these lived values were consistent across all four communities, sixteen were identified in three of the four communities and twenty-two were identified in two of the four communities. Twenty-two lived values mentioned in the survey responses had not been identified in the scoping interviews.

The most commonly identified lived value within each community and across all communities was the peace and quiet, which was identified by 62 respondents (46.3% of the sample). Other lived values that were frequently identified in all four communities were the fishing (23.9%) and being close to the water (23.1%). The lived values that were most frequently mentioned in each community were the friendly people (15/51) and good eateries (7/51) in Port Albert, the walking opportunities in Manns Beach (4/11), and the beach in Seaspray (18/52) and McLoughlins Beach (7/20).

The four lived values that respondents most frequently and consistently rated as being "very important" across the four communities were the slow pace of life, peacefulness, being close to water, and the natural environment (Fig. 3). The least agreement across the communities in terms of what was highly valued were: affordability of housing, to start a business, the climate, and feeling well respected.

Cluster analysis was used to help understand the variation that existed in the lived values within and across communities and understand whether particular groups of residents are more likely to be affected by sea-level rise with respect to their non-material values. The five cluster solution produced clearly distinguishable groups of residents who had distinct sets of lived values. Table 2 shows how residents were distributed among the groups and the characteristics of each group according to the clustering variables. Table 3 shows a selection of lived values that were different across the clusters. Table 4 identifies the proportions of respondents from each community that belonged to each cluster. Tables 2 and 3 underpin the descriptions of each resident group that follows, including the lived values that are most important to each group.

5.1. Group 1: self-sufficient, middle-aged primary residents (12.7%)

This group was the youngest, had the second highest incomes and the second highest levels of educational attainment (Table 3). Two-thirds of this group were working (full- or part-time) and none had a long-term family connection to the places in which they lived or owned a second home. This group was considered to be 'middle-aged' because three-quarters (76.4%) of the group were aged between 45 and 64 years of age. The group was considered to be 'self-sufficient' because they were the least likely to rely on others for their enjoyment of life; they were the least likely to rate 'sense of belonging', 'being close to friends', 'everybody knows everybody', 'feeling supported by the community' and 'feeling like a well-respected member of the community' as very important. This group was also considered to be self-sufficient because four-fifths (82.4%) of the group had few, if any, close friends (Table 2) and were less likely to spend time interacting with friends, neighbours and other members of the community than all the other groups. The things that were more important to this group than almost all the other groups were retirement opportunities and escaping the city.

5.2. Group 2: community-minded business owners (17.9%)

All members of this group were employed in full or part-time work (Table 2) and five-sixths (83.3%) of the group were business owners. The importance of running a business and having a job was reflected in their lived values, they were the most likely to rate 'to start a business', 'business opportunities', 'employment opportunities' and 'job satisfaction' as very important to them. This group was considered to be 'community-minded' for three reasons. First, they undertake a lot of volunteer work. Almost all (95.8%) were members of at least one community organisation and four-fifths (79.2%) were members of at least two community organisations. Members of this group were the most likely to participate in volunteer work on a weekly or more frequent basis. Second, this group was socially active. Members of this group interacted with family, neighbours, work colleagues, group members and other members of the community more frequently than all the other groups. They were also the most likely to go out for a meal or coffee. Third, members of this group were the most likely to identify 'sense of belonging' as being very important to them.

5.3. Group 3: socially-networked circumstantial seachangers (32.1%)

Almost three-quarters (72.1%) of this group have moved to the small communities from a capital city; i.e. they are seachangers (Table 2). The ongoing ties to the city from which they came are evident in their lived values; they were the least likely to rate 'slow pace of life', 'relaxed lifestyle' and 'peacefulness' as being very important to them (Table 3). These seachangers are carers, students, workers and retirees. The group is considered to be 'socially networked' because four-fifths (79.1%) of the group have at least a few close friends and nine-tenths (90.7%) are members of at least one community organisation. This group was the least wealthy of all the groups; it is estimated that almost half (47.4%) live below the poverty line (the equivalent of 50% of median household incomes; ACOSS, 2014). Given the low income of this group and the lack of enthusiasm for the lived values offered by these small communities, it seems likely that these seachangers are 'circumstantial'; they have moved to these communities because of affordability issues rather than because they wanted to be seachangers. This is consistent with their lived values; this group was more likely than almost all the other groups to rank 'financial security' as being very important to them.
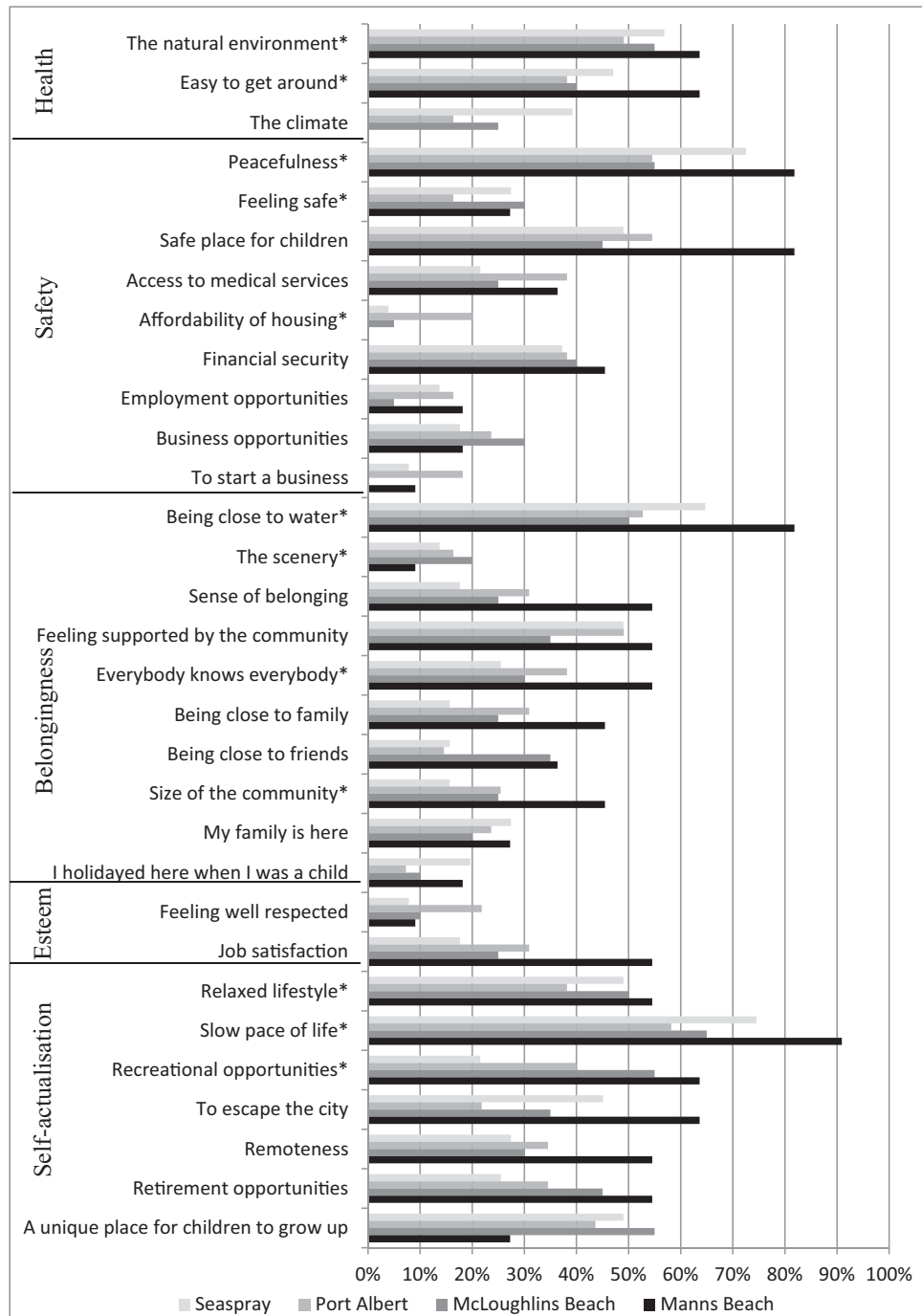
Fig. 3. Proportion of respondents from each community who rated each lived value as 'very important'. Asterisks indicate lived values that were mentioned by respondents in all four communities in response to the open-ended questions.

5.4. Group 4: regional retirees (22.4%)

Nine-tenths (90%) of this group were over 55 years of age and three-quarters (76.7%) were retired or semi-retired. This group was considered to be 'regional' retirees because only a small proportion (23.3%) of the group had moved from a capital city, three-quarters (76.7%) had a long-term family connection to the area (Table 2) and almost half (46.7%) had lived in their community or the surrounding areas for more than 30 years. The lived values that this group rated as more important than the other groups were 'retirement opportunities', 'affordability of housing', 'remoteness' and 'feeling supported by the community'. They were more

likely to go for a walk or read a newspaper than the other groups. This group was the oldest and the second poorest. It also had the lowest levels of educational attainment; four-tenths (40%) of the group had finished school at Year 10 or below or had not gone to school, reflecting in part their age.

5.5. Group 5: coastal-hamlet loving, working, second home-owners (14.9%)

Three-quarters (75%) of this group are second home-owners, four-fifths (80%) have a long-term family connection to the small communities and almost two-thirds (65%) have had homes in the

Table 2
Cluster analysis result. Cluster characteristics as per the selected variables. Bold and italics indicate the highest and lowest proportions of all the clusters, respectively.

Selected variables	Group 1 Self-sufficient middle aged primary residents	Group 2 Community-minded business owners	Group 3 Socially-networked circumstantial seachangers	Group 4 Regional retirees	Group 5 Coastal-hamlet loving second home-owners
N	17	24	43	30	20
Cluster%	12.7	17.9	32.1	22.4	14.9
Working (%)	64.7	**100.0**	11.62	*0*	**100.0**
Business owner (%)	*0*	83.3	4.7	*0*	15.0
Long-term family connection (%)	*0*	8.3	16.2	76.7	**80**
Seachanger (%)	58.8	25.0	**72.1**	*23.3*	50.0
None or one close friend (%)	**82.4**	*4.2*	20.9	10.0	25.0
Member of at least one community organisation (%)	*23.5*	**95.8**	90.7	43.3	55.0
Primary resident (%)	64.7	79.2	**100.0**	60.0	*25.0*

Table 3
Selection of demographics, lived values and interactions that were different across the clusters. Bold and italics indicate the highest and lowest proportions of all the clusters, respectively.

Non-selected variables	Group 1 Self-sufficient middle-aged primary residents	Group 2 Community-minded business owners	Group 3 Socially-networked circumstantial seachangers	Group 4 Regional retirees	Group 5 Coastal-hamlet loving second home-owners
Demographics					
Education (University or TAFE)	58.8	**75.0**	39.5	*33.3*	55.0
Income (Less than $400/week)	29.4	*4.2*	39.4	**43.3**	5.0
Residence length (Less than 20 years)	**82.4**	75.0	72.1	43.3	*35.0*
Lived values					
Safe for children	*17.6*	58.3	34.9	30.0	**60.0**
Remoteness	*23.5*	33.3	25.6	40.0	**70.0**
Natural environment	*41.2*	66.7	44.2	53.3	**80.0**
Close to water	52.9	75.0	*46.5*	60.0	**80.0**
Easy to get around	*29.4*	**67.0**	30.2	43.3	65.0
Peacefulness	58.8	75.0	*51.2*	66.7	**85.0**
Slow pace of life	47.1	54.2	*30.2*	46.7	**70.0**
Feeling safe	*41.2*	**75.0**	44.2	50.0	70.0
Sense of belonging	*11.8*	**50.0**	30.2	33.3	45.0
Everybody knows everybody	*5.9*	25.0	20.9	33.3	**45.0**
Feeling like a well-respected member of the community	*5.9*	20.8	23.3	36.7	**50.0**
Interactions					
Family	35.3	**62.5**	*32.6*	53.3	60.0

Table 4
Proportion of respondents from each of the four communities who belonged to each of the five types of residents identified in the cluster analysis.

	Group 1 Self-sufficient middle-aged primary residents	Group 2 Community-minded business owners	Group 3 Socially-networked circumstantial seachangers	Group 4 Regional retirees	Group 5 Coastal-hamlet loving second home-owners
Seaspray	19.2%	7.7%	25%	26.9%	21.2%
Port Albert	7.8%	27.5%	37.3%	15.7%	11.8%
Manns Beach	9.1%	36.4%	0%	27.3%	27.3%
McLoughlins Beach	10%	10%	55%	25%	0%

communities or surrounding areas for more than 20 years (Table 3). All the members of this group are employed in full or part-time work, hence the inclusion of 'working' in the title. They also have the highest incomes of all the groups; seven-tenths (70%) of this group earned more than the median weekly incomes for their respective communities (Table 1). This group are considered to be 'coastal-hamlet loving' because they were consistently more likely than the other groups to rate the lived values of these communities as being very important to them. The values of particular importance to this group pertained to those that make these places coastal hamlets, such as 'remoteness', 'peacefulness', the 'slow pace of life', 'everybody knows everybody', 'being close to water' and the 'natural environment'. This group was also the group that reported visiting the beach most often. As second home-owners, this group

was the most likely to value being able 'to escape the city' and 'affordability of housing'.

6. Lived values and fairness in adaptation

The number (135) of lived values identified by interviewees and survey respondents was commensurate with the number of people involved in the research. Seeking to accommodate all these values in adaptation policy would be overwhelming and explains why past research on local responses to climate change has found diverse values to be a barrier to adaptation (e.g. Paschen & Ison, 2012). Yet there are many commonalities among the lived values identified within and across communities; some values are particular to certain places while other values are prioritised by

particular types of people across communities. Understanding such spatial and social sharing of lived values can help decision-makers identify how adaptation policies will affect particular places and the people living within them, providing a means of achieving fair adaptation.

In the discussion that follows the first section considers the range of lived values that were found to be important in each place and how this compares with past values-based studies. The second part evaluates the way in which understanding the values that particular groups of people hold challenges our traditional understanding of vulnerability. The third section explains how understanding place-specific and people-centric values can inform fair local adaptation.

6.1. Region and place-specific lived values

There was some agreement among survey participants about what they value about their communities. Residents in all four communities highly value the natural environment, being close to water, the peacefulness and the slow pace of life. They also value the relaxed lifestyle, the ease of getting around and being a safe place for children, although these qualities were ranked less highly (Fig. 3). Compared to a larger community along the same coastline (Graham et al., 2014), the only lived value that was highly valued across both small and larger communities was the natural environment. Other studies indicate that natural areas were the most highly valued features of urban (Kreller, 2016), remote (Karlsson et al., 2015), indigenous (Reid et al., 2014) and island (Mortreux & Barnett, 2009; Novaczek, Macfadyen, Bardati, & Maceachern, 2011) coastal communities in developing and developed countries. Yet in these four small communities the value placed on the natural environment went beyond aesthetics (e.g. Graham et al., 2014; Karlsson et al., 2015; Novaczek et al., 2011; Puleston, 2012), as the scenery was valued less highly, and instead was related to its intrinsic, recreation and therapeutic values.

Of particular importance to these small communities was peacefulness. Overall, residents valued the small sizes of the communities they lived in and the associated slow pace of life that comes with living in these relatively remote places. This is consistent with other regional and remote coastal research, where communities that are "off the beaten track" value the tranquillity of the places in which they live (Karlsson et al., 2015; Puleston, 2012, p. 52). It is also consistent with values of residents in small island states where the 'peaceful' and 'easy' life is highly valued (e.g. Mortreux & Barnett, 2009). As per other small communities in developing countries (Karlsson et al., 2015), the residents here also acknowledge the limitations of living in small communities, such as the limited business and job opportunities.

While the small size of the communities and the proximity to water and natural areas are valued by residents in all four communities, there are some specific qualities valued by residents in each place. Apart from the values that were only mentioned by a single respondent, the values that were particularly important in Port Albert were those associated with the heritage and history as well as the cafes and restaurants, business opportunities and tourism. Seaspray was valued for its lack of development, such as not having a pub (hotel), and McLoughlins Beach and Manns Beach were valued for the walking opportunities they provide as well as the lack of shops. McLoughlins Beach residents particularly appreciated the walking paths available and Manns Beach residents appreciated the sense of continuity that Manns Beach provides. These features give each place a sense of uniqueness and make residents feel like there is no other place like where they live (Karlsson et al., 2015).

There were only a small number of lived values that were unique to each place. This shows how identifying commonalities and differences in lived values across communities can readily make a large and diverse list of values small and manageable for decision-makers and help local communities articulate how their needs are different to those of proximate communities. The values that were unique to each place were largely related to the history of each place. Port Albert is one of Victoria's oldest seaports and has a number of historic buildings that not only make it unique among these four communities but to the region more broadly (www.portalbert.vic.au). The lack of development in Seaspray is related to its tenuous history as a settlement, being situated on sandy hummocks at the mouth of Merriman's creek (The Gippsland Times, 28/6/1923, p. 7). Manns Beach has residents whose families have decades-long connections to the place (Fincher et al., 2014). This is consistent with past values-based studies in developing countries, which have highlighted the importance of recognising historical ties (Karlsson et al., 2015; Mortreux & Barnett, 2009) and historical context (Coulthard, 2008; Nielsen & Reenberg, 2010) in adaptation planning. More generally, these findings highlight the importance of understanding the relationship between the experience of everyday life and the characteristics of the (natural) environment for achieving environmental justice (Schlosberg, 2013).

While the lived values mentioned here represent a snapshot of what residents currently value, there was evidence that these values are intergenerational. Residents valued the environment, small community size, peacefulness and slow pace of life because it connected them with a way of life of past generations, and a desire that such values could be maintained for future generations (Fincher et al., 2014). The process of documenting and accommodating lived values needs to recognise the extent to which such values grow, persist or decline in importance over time. This is especially important given that policy makers and scientists focus on potential future impacts that are rarely synchronised with local experiences of place and time (Fincher et al., 2015).

6.2. People-centric lived values and vulnerability

Focusing on place-specific values provides decision-makers with one option for tailoring adaptation planning to individual places, yet even within communities there are diverse perspectives on what is valued. The cluster analysis reveals that individuals within a community may have more in common with residents from other communities than their own. Understanding similarities and differences in the types of people who live within and across communities helps decision-makers to understand who is vulnerable and how. It also provides a way of developing regional plans that can be tailored to individual communities while addressing *all* concerns (Forsyth, 2014).

People on low incomes are one of the most commonly identified vulnerable groups in adaptation planning (Collins, 2016). They are usually perceived to be situated in riskier locations, have livelihoods that depend on at-risk natural capital, and lack access to resources, which means that they are likely to find it more challenging to adapt to climate change (Collins, 2016). In the small communities here, the socially-networked circumstantial seachangers were the poorest of the five groups identified. While they tend to live below the poverty line, this is likely to be because they are on pensions or welfare and therefore do not depend on livelihoods that are likely to be affected by floods, as is the case elsewhere (Kelly & Adger, 2000). This group of residents appears to live in these small communities because of the low cost of living, rather than a particular attachment to the physical place; they did not particularly value the peacefulness, being close to water or the natural environment. Thus, as per research in other at risk communities in low-lying island states (Mortreux & Barnett, 2009), this poorer group of residents may be the most willing to relocate.

Yet, it is also important to note that this group was socially-networked, frequently interacting with friends and volunteering for community organisations. Thus if this group was to be supported in relocating, consideration would need to be given to their financial security as well as the maintenance of their social relationships. Alternatively, if local governments wished to engage in a community-based approach to adaptation, this group's social networks could provide the cohesion needed for community-based adaptation to be successful (Mikulewicz, 2017). As argued by Lin and Chang (2013), such local social capital may inspire positive change that empowers local communities to adapt.

The elderly are another group who are traditionally considered to be vulnerable to climate change because of their susceptibility to health problems (Schlosberg, Niemeyer, & Collins, 2015). In this study the regional retirees were the oldest of the groups in the four communities. It was also the second poorest, indicating that they are vulnerable in more than one way (Collins, 2016). Despite their age, this group did not strongly value having access to medical services. Instead, they valued being part of a small, supportive community where everybody knows everybody. As per other climate adaptation studies, it may be that this group does not perceive themselves to be "old" or vulnerable and that they believe that their social networks make them more resilient (Quinn & Adger, 2011; Wolf, Adger, Lorenzoni, Abrahamson, & Raine, 2010). We concur with Wolf et al. (2010) that adaptation planning for this group should appeal to individuals' sense of independence and explicitly consider social networks in the development of responses. Adaptation plans also needs to recognise their residence length (24.9 years on average), which is likely to make them more resistant to relocation (Lewicka, 2011), yet their desire to be part of a supportive community may mean that they can be effective engaged in community-based adaptation efforts (Mikulewicz, 2017).

The community-minded business owners are vulnerable to the impacts of sea-level rise because their lived values are intertwined with their businesses, which are their livelihoods. Past research has recognised that businesses may need to relocate as a result of climate change, yet there is little attention given to the impacts that such relocation would have on communities (Kaján & Saarinen, 2013). In the case of Gippsland East, the community-minded business owners contribute significantly to the social capital of the four communities. If they were to relocate, there would be flow on effects to other residents that value social relationships, such as the socially-networked circumstantial seachangers. This suggests that adaptation planning not only needs to consider the impacts of sea-level rise on business owners, but also the flow on effects that may ensue if those businesses chose to adopt a relocation strategy in the absence of more strategic, community-based approach.

The self-sufficient, middle-aged primary residents are not poor or elderly, nor do they have livelihoods that are based in these physically vulnerable places. Yet this group may be considered to be vulnerable due to their small or absent social networks. At least one local government within Australia considers "socially isolated" residents in their adaptation planning because of concerns that such residents may be less likely to adapt or may not have others to provide them with assistance when needed (Collins, 2016). There is limited empirical research into the vulnerabilities to sea-level rise and flooding of those that are socially isolated; however, research into the impacts of temperature on socially isolated individuals suggests that they need measures tailored to them (McGeehin & Mirabelli, 2001; Scheraga & Grambsh, 1998). In the case of adaptation to sea-level rise, the self-sufficient, middle-aged primary residents may be more accepting of a relocation policy given their lack of social networks, their relatively short length of residence (their average residence length was 11.3 years, the lowest of all the groups), and their key lived values—recreational opportunities and escaping the city—are qualities that are available elsewhere. This group may also be more challenging to engage in a community-based adaptation solution.

The impacts of climate change on non-permanent residents, like second home-owners, are rarely considered in the academic literature. The finding here that the coastal-hamlet loving second home-owners in these four communities are strongly attached to the communities is consistent with past research on second home-owners (e.g. Kelly & Hosking, 2008; Stedman, 2006). Indeed past research has found that the more second home-owners visit a place and the longer their residence (25.2 years on average for this group – the highest of all the groups), the stronger their commitment to those places and the greater the likelihood that they will move permanently to these regions (Kelly & Hosking, 2008). Thus it is important for local governments to consider the lived values of second home-owners in adaptation planning because they represent potential future permanent residents who will be at risk of sea-level rise and resistant to relocation. Furthermore, second home-owners have been found to halt or reverse rural decline through their contribution to local communities and economy (Connell & McManus, 2011). Thus adaptation planning needs to consider the possibility that second home owners may choose not to retire to these communities because of sea-level rise and/or the associated adaptation responses.

Focusing on people at risk reveals that adaptation policy needs to go beyond taking into account the impact of climate change on material things. We agree with Agyeman et al. (2009) that climate adaptation needs to accommodate place attachment, especially the values placed on social networks and community organisations that foster a sense of belonging. Focusing on such people-centric values reveals a risks and hazards approach to vulnerability is not sufficient for understanding how individuals within a community are likely to be affected by and respond to different adaptation policies. Instead, social vulnerability and values need to be considered alongside one another.

6.3. Fair adaptation, values and local governments

The previous sections have explained how understanding place-specific and people-centric lived values can address challenges governments face in reconciling diverse values in local adaptation policy. This section briefly considers the way in which understanding similarities and differences in lived values within and across communities can aid the achievement of fair adaptation beyond rethinking how vulnerability is conceptualised and operationalised.

Distributive fairness in climate adaptation involves ensuring that outcomes are equitable (Adger, 2013). Understanding the diverse lived values within communities provides local governments with a way of evaluating how climate change impacts, such as sea-level rise, as well as adaptation policies—accommodation, protection and retreat—are likely to affect different groups of people within a community. For example, retreat may be a more acceptable option to the self-sufficient middle aged primary residents and the socially-networked circumstantial seachangers if retirement opportunities and social relationships are maintained, respectively. If the business owners choose to relocate then this may have flow on effects for the socially-networked circumstantial seachangers and coastal-hamlet loving second-home owners. Thus the lived values approach helps identify trade-offs between different adaptation options, shows where maladaptation may occur, and provides ideas on how impacts may be offset to ensure that no particular group is rendered more vulnerable or bears a greater burden as a result of adaptation.

If adaptation is to be procedurally fair, it needs to ensure that all residents are at least represented in adaptation decision-making (Paolisso et al., 2012) or at best have political power to influence

adaptation decisions (Few, 2003; Holland, 2017; Mikulewicz, 2017). Engaging with community organisations may be an effective means of accommodating the views of socially-networked circumstantial seachangers, regional retirees and the community-minded business owners but may be less effective in reaching self-sufficient, middle-aged primary residents and the coastal-hamlet loving second home-owners. While quantitative surveys can help local governments to reach a wider range of residents than may be possible using standard community engagement techniques, it is not sufficient for engaging the community in robust debates about the trade-offs involved or compensation required for various adaptation options. Thus further research is required to find ways of engaging with people who may be socially isolated or spatially distant from communities at risk.

7. Conclusion

The lived values approach used here facilitates an understanding of the situated determinants of fair adaptation – fairness has its subjective, spatial, social, and temporal dimensions that cannot be captured by assessments based on material and economic and circumstances alone. When viewed from the perspective of distributional fairness, a lived values approach goes beyond just measuring the socio-economic characteristics of people (e.g. their incomes, age, dependence) and assuming certain groups are more vulnerable than others on that basis. It allows us to understand what people's practices and resources, including social networks, are in places. From the perspective of procedural fairness, a lived values approach draws attention to the local and the opportunities of shared governance. It enables a more socially nuanced guide to the local politics of adaptation, identifying winners and losers from potential adaptation processes, the diverse needs of constituencies in terms of engagement processes and outcomes, and bundles of adaptation responses that may satisfy some – if not all – members of communities. This approach will be particularly important to consider in communities which face some level of disadvantage, located in developed or developing nations.

Conflict of interest

Acknowledgements

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.worlddev.2017.12.008.

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